Nova Scotia

ANNUAL REPORT

for the fiscal year
ending March 31, 1988

Department of Fisheries

90-00733/

To His Honour
The Honourable Lloyd R. Crouse, P.C.
Lieutenant-Governor of Nova Scotia

May It Please Your Honour:

I have the honour to submit herewith the Twenty-Fourth Annual Report of the Department of Fisheries, for the fiscal year ending March 31, 1988.

Respectfully submitted,

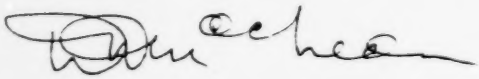
Donald P. McInnes
Minister of Fisheries

To The Honourable Donald P. McInnes
Minister of Fisheries

Sir:

I have the honour to submit the Twenty-Fourth Annual Report of the Department of Fisheries, for the fiscal year ending March 31, 1988.

Respectfully submitted,



D.A. MacLean
Deputy Minister

CONTENTS

The Fishing Industry 9
Industrial Development 10
Fisheries Loan Board 18
Training and Field Service
Training 21
Field Service 26
Marine Resources 27
Aquaculture and Inland Fisheries 29
Marketing 34
Administrative Services 37
Statistical Review 39

THE FISHING INDUSTRY

The total landings of commercial marine species in Nova Scotia increased slightly in 1987.

Fishermen in the province landed 493,371 metric tons of fish, shellfish and marine plants in 1987, representing a 6.5 percent increase over the 1986 catch of 463,349 metric tons. The landed value of all species increased 24 percent to a record value of $524.2 million from $423.9 million.

Lobster again placed first in terms of being the most valuable species in 1987, returning $160.3 million to fishermen. Cod was second with a landed value of $120.7 million, while scallops provided $83.4 million to fishermen in that sector of the industry.

The groundfish sector of the fishery posted a slight decrease in landings of 7 percent. The shellfish, as well as the pelagic and estuarial sectors showed increases in weight of 25 percent and 31 percent respectively in 1987.

INDUSTRIAL DEVELOPMENT

The Industrial Development Division administers two major programs.

1. The Development Program:
   - provides cost-sharing incentives for industry to upgrade fishing vessels, harbour infrastructure, shore based facilities and processing plants with proven technology;
   - supports development and demonstration projects as a means of introducing new and/or improved technology to the industry;
   - provides engineering services to other divisions of the department.
2. The Inspection Program:
   - administers the Fish Inspection and Fish Buyers Regulations.

TECHNOLOGY DEVELOPMENT—FISHING VESSEL AND GEAR

The department completed its study on the feasibility of landing headless, gutted groundfish in conjunction with a fisheries research organization. The results of this project indicated marginal improvements in fillet yields and landed quality. The participating fish processor will be reviewing the program to determine if it can be implemented throughout the operation.

Vessels equipped with stabilizers are quite common in Western Nova Scotia. To support their introduction elsewhere, the department cost-shared two projects in Cape Breton, where stabilizers were installed on inshore draggers.

A unique application of an existing technology took place in Yarmouth County. A hydraulic marine crane was installed on an inshore lobster vessel. This equipment was used to handle traps onboard and to assist in the movement of gear from the rail to the aft deck.

A 55-foot glass reinforced plastic (G.R.P.) groundfish dragger was equipped with a controllable pitch propellor and matching nozzle. This installation followed on the heels of a similar one in the Pubnico area. The vessel was constructed in a local boat shop and C.P.P. equipment was installed by the builder and equipment supplier. There were some initial problems with cavitation but these have been rectified. The vessel

is now operating effectively in the southwestern Nova Scotia groundfish industry.

The department entered into a cost-sharing agreement with the Technical University of Nova Scotia to have two graduate students measure the hull forms of representative, "Cape Island" type vessels. Using these measurements, the students prepared drawings and initiated a study of their static ability. Work will continue in the 1988/89 fiscal year.

TECHNOLOGY DEVELOPMENT—SHORE BASED FACILITIES

The technical staff continued to provide comprehensive guidelines and consultation services on construction practices for many of the shore-based incentive programs. Onsite supervision by the division's engineers is often necessary and they are assisted in the summer by engineering students.

Several projects were undertaken to address problems in the processing sector. One project involved building a computer-controlled heat pump salt fish dryer. Preliminary results of the pilot project, which was conducted in a laboratory setting, indicate that the system is capable of producing light salted fish products and is cost-efficient. The next step is to apply the technology to a commercial drying operation.

Another project involved the small scale production of a fish sauce, which was made by adding an enzyme to herring and maintaining the mixture at a constant temperature for several months. The resulting liquid can be used as a food sauce or in food preparations. Demand for such a product has come from oriental communities in North America. There are no North American producers of fish sauces. The project was conducted in conjunction with a private company, which plans to use the information in making a decision on whether to proceed with commercial production of the product or not.

TECHNOLOGY DEVELOPMENT— FISH PRODUCTS AND PROCESSING

Initiatives aimed at making use of fish waste continued to be emphasized during the past year. Working in cooperation with Agriculture Canada—Kentville, the department studied the feasibility of using fish silage as a fertilizer for various vegetable crops. Liquid, concentrated and dried silage produced favorable results when compared to conventional inorganic fertilizers. Silage was also used as a foliage spray in several

experimental trials. A mixture of animal and fish silage was also applied in limited quantities to a number of pastures and haylands in the Canning area.

Two pilot projects using groundfish silage as hog feed were successfully completed. The department and the Agriculture Canada experimental station at Nappan have agreed to conduct similar tests on ruminants using high fat herring silage. These experiments using sheep and beef cattle are scheduled for the summer and fall of 1988.

A large capacity (6000 pounds/batch) low cost mechanical smoker, designed and constructed last year, has been operating successfully during the winter. Using herring carcasses discarded from roe operations, the unit can produce hard cured bloaters in six days. The machine also proved efficient in producing various smoked products such as kippers, smoked fillets and "jerky" types of herring strips. The latter is currently being marketed in various snack outlets.

The department continued to conduct technical demonstrations at plant locations throughout the province, including onsite use of various types of processing equipment. Using a mechanical meat separator, Jonah crab was processed into a variety of seafood products in a Yarmouth area plant. A mined product was developed from salt fish trimmings and the product was introduced to the market place. Similar demonstration projects using the department's mussel meat separator and debysser took place at locations in Cape Breton and the South Shore.

A salt fish processor received technical assistance for a project to reduce turbid conditions in a sea water supply system. The resulting design of a reverse velocity flow liquid/solid separator proved effective up to flows of 125 gpm.

Several research and development projects were carried out in conjunction with the Technical University of Nova Scotia. These projects included the sucessful conversion of dogfish wastes (skins and viscera) into stable silage products and the evaluation of processes to produce a cost-efficient low fat silage from high fat materials (herring carcasses).

A detailed review of the department's work on fish silage was presented at a federally sponsored silage work shop at St. Anne University in Church Point.

FINANCIAL INCENTIVES—HARVESTING

Emphasis was placed on safety and quality improvement programs. A total of 262 applications were processed, a significant increase over the previous year.

Safety is a prime concern of the division, which continued to cost-share the purchase of approved liferafts. In total, 226 applications were processed. The department also approved nine applications to install halon fire fighting equipment.

Ten vessels were equipped with propellor nozzles to improve engine efficiency. These projects were monitored by the department's technical staff.

FINANCIAL INCENTIVES—ONSHORE FACILITIES

Activities related to harbour infrastructure more than doubled in the past year. Three areas of major interest were fishermen gearsheds, private wharves and public boat ramps. The department assessed 45 applications, 75 of which were approved and completed.

Technical and financial assistance was provided for:
- 37 private fishing wharves
- 22 gear shed buildings accommodating gear and work space for 165 fishermen
- 11 public boat ramps

About $290,000 was allocated to the private wharf program to cost share the purchase of construction materials. The wharves were designed and constructed under departmental direction and with the assistance of technical staff.

The province provided a total of $412,000 as a cost-sharing arrangement for the construction of fishermen's gear sheds throughout the province. These were built as community buildings and divided into individual units for fishing gear storage and maintenance.

Public slipways were completed at 11 locations to be used by fishermen and aquaculturists. Expenditures on the slipway program totalled $123,000 and all projects were coordinated or constructed by fishermen or fishermen's groups. Design and site evaluations were conducted by departmental engineers or technicians.

Another project involved the evaluation of a provincially maintained harbour and making recommendations for major harbour improvements.

FINANCIAL INCENTIVES—PROCESSING

This program area addressed the issues of fish quality and operational efficiency as they pertain to processors, fishermen and aquaculturists. Projects included refrigerated storage, plant cleaning equipment, fish handling boxes and mussel grading machines. A total of 259 applicants received $630,000 in cost-sharing assistance under this program.

Funding was provided for 15 cool/cold storage projects and 21 bait/trawl freezing facilities. Written guidelines and technical assistance during construction ensured the buildings were properly constructed.

The division received 189 fish handling container applications with the bulk of the requests coming from fishermen installing insulated containers onboard their vessels.

Thirty processors received cost-sharing assistance for the purchase of steam/high pressure cleaners used to clean working areas and fish processing equipment.

The aquaculture industry is expanding and some operators are requiring mechanical equipment for declumping and grading shellfish products. Two companies received assistance to purchase these machines.

FISHERIES INSPECTION SERVICES

The department's inspection service has completed its second year of operation. One full-time person is involved in a variety of activities including the administration of the Nova Scotia Fish Inspection and Fish Buyer's Regulations. The department issues Fish Buyer's Licenses to individuals and/or companies purchasing fish in Nova Scotia.

The department, in co-operation with the federal Department of Fisheries and Oceans, issued Nova Scotia fish processing licenses to all processing establishments in the province which met regulatory standards.

A number of quality related projects were initiated by the Inspection Service and were completed in conjunction with industry and the Department of Fisheries and Oceans.

CANADA—NOVA SCOTIA
ECONOMIC REGIONAL DEVELOPMENT AGREEMENT—FISHERIES

The Fisheries Subsidiary Agreement between Canada and Nova Scotia was signed in October 1984. The agreement has a total value of $50 million over five years. Federal and provincial expenditures will amount to $35 million and $15 million respectively. The program and budget structure are as follows:

Sector	Five Year Budget ($000,000) Federal	Provincial
A. Quality Enhancement	21.0	1.5
B. Efficiency Improvement	10.5	6.0
C. Market Improvement	0.5	2.0
D. Resource Enhancement	1.5	5.0
E. Public Info, Evaluation and Administration	1.5	0.5
TOTAL	35.0	15.0

Funding for the Agreement was approved in August 1985 in an interim amount of $28.5 million ($20 million federal, $8.5 million provincial) for the period 1985–86 to 1988–89. Depending upon a review to be completed prior to April 1, 1989, a new agreement may be negotiated for the remainder of the funding which amounts to $21.5 million ($15 million federal, $6.5 million provincial).

Provincial projects are selected on the basis of the following criteria and order of priority:

1. Development—Generic

Projects, including marketing and aquaculture development resulting in products or processes of benefit to the industry as a whole (e.g. utilization of waste products).

2. Development—Company Specific

Research and development of primary benefit to a specific company (e.g. a new seafood product).

3. Technology Transfer

Evaluation of technology developed elsewhere or in another sector but not yet utilized in Nova Scotia's fishing industry (e.g. reverse osmosis seawater desalinators).

4. Training Programs

Includes the cost of providing training for new initiatives (e.g. dockside grading).

5. Public Facilities

Government-owned infrastructure (e.g. hatcheries).

6. Incentive Projects

Cost-sharing grants to encourage further use of equipment, facilities or processes proved effective to achieve specific objectives in the province (e.g. equipment related to quality improvement).

The following programs and projects were approved and completed during the 1987–88 fiscal year:

	Primary Responsibility	
	Federal	**Provincial**
Quality Enhancement		
Ice-making and storage	•	
Electricity and water to processors	•	
Vessel fish hold upgrading	•	
Fish grader training		•
Clam industry testing		•
Efficiency Improvement		
Semi-automated gutting machine		•
Consulting services to processors		•
Heat pump dryer evaluation		•
Fishermen's gear shed construction		•
Herring roe evaluation		•
Plant operations study		•
Silage based fish feed		•
Skidways and haul-outs	•	
Development of aluminum hulls for the Atlantic fishery	•	
Market Development (cost-shared by Nova Scotia and Department of Fisheries and Oceans)		
(87/88) ERDA food shots		
(87/88) ERDA seafood in the microwave		
(87/88) ERDA lobster pamphlet		
(87/88) ERDA barbeque poster		

(87/88) ERDA Maritime seafood promotion western Canada
(87/88) ERDA retail manual
(87/88) ERDA retail display
(87/88) ERDA shellfish campaign
(87/88) ERDA national seafood promotion

	Primary Responsibility	
	Federal	**Provincial**
Resource Enhancement		
McGowan Lake trout hatchery		•
Potential bottom culture sites for scallops		•
Overwintering technologies for salmon culture		•
Temperature recording equipment		•
Site surveys—European flat oysters		•
Site surveys—Blue Mussels		•
Design of a small scale shellfish hatchery		•
Culture technology—Bay Scallops		•
Promotional videos		•
PH mitigative experimentation		•

Public Information, Evaluation, Administration
For the 1987–88 fiscal year, the provincial budget was $2.3 million and the federal budget was $5.5 million.

FISHERIES LOAN BOARD

During the 1987–88 fiscal year the number of approved applications more than doubled that of the previous year due to the increase in the amount of funding available to the Board. There was an increase in the number of loans paid off during the year. The amount and number of loans in arrears continued to decrease. Principal arrears at March 31/88 amounted to $1,157,177—down approximately $1,697,548 from the previous year.

Ten meetings were held during the year and of the 362 applications considered, 216 were approved, 47 rejected, one deferred and 98 returned to the applicants either because they did not qualify under the Board's regulations or because they were received after funding for the year had been allocated. Ten loans already in existence were assumed by other applicants.

Gross value represented by the approved loans totalled $21,630,313. After deduction of down payments, total net loans amounted to $16,863,941. A total of 302 loans were paid off during the year.

The following table compares Loan Board activity over the past five years:

Year Ending Mar. 31	Applications Received	Loans Approved	Net Amount Approved	No. of Outstanding Loans	Amount Outstanding
1984	307	175	$ 5,268,848	2,100	$96,065,525
1985	263	121	3,972,682	1,966	84,994,445
1986	240	109	6,267,295	1,774	74,068,949
1987	237	105	5,670,410	1,555	62,450,835
1988	362	216	$16,863,941	1,454	$59,520,867

In addition to the outstanding loans of $59,520,877 at year end, there were outstanding commitments of $3,910,835. Advances during the year amounted to $13,164,122 and repayments on the principal totalled $13,580,855. A further $5,017,790 was received on interest. Write-offs during the year amounted to $1,974,680.

A breakdown of the types of loans approved is as follows:

	No.	Amount
New boats to 39'11"	82	$ 3,431,305.47
New boats 40' to 43'11'	15	1,329,950.40
New boats 44' to 44'11"	21	4,450,643.01
New boats 45' to 64'11"	17	6,097,317.01
Used boats to 39'11"	11	320,798.17
Used boats 40' to 43'11"	2	65,196.00
Used boats 44' to 44'11"	2	134,400.00
Diesel engines	51	852,944.62
Gas engines	3	13,689.12
Equipment	7	34,180.70
Conversion	1	46,254.40
Aquaculture	4	87,261.84
	216	$16,863,940.74

Loans approved, by counties, were as follows:

	No.	Amount
Annapolis	5	$ 1,080,800.00
Antigonish	13	261,947.16
Cape Breton	23	1,176,228.48
Colchester	1	32,000.00
Cumberland	4	77,029.60
Digby	7	1,146,042.04
Guysborough	6	492,063.12
Halifax	26	2,209,590.51
Inverness	22	1,621,303.20
Lunenburg	8	343,389.85
Pictou	8	139,923.10
Queens	4	158,007.44
Richmond	7	274,715.44
Shelburne	36	2,805,431.39
Victoria	13	353,750.60
Yarmouth	33	4,691,718.81
	216	$16,863,940.74

During the year, 20 loans were cancelled in the amount of $466,729.00.

TECHNICAL AND INSPECTION SERVICES

During the year, 72 boats were completed with Loan Board financing. Technical services were provided during the preliminary planning and construction stages of these boats. Progress inspections were made by inspectors on 107 boats. At the end of the fiscal year, 35 of these boats were at various stages of construction and subject to further inspection. In addition, 55 used boats were inspected; 70 boats were inspected for engine and equipment loans and 743 boats were inspected for maintenance and housekeeping. Twelve sea trials were held. Nineteen new boat shops or fibreglass moulds were inspected and fourteen new builders were added to the Board's list of approved builders.

TRAINING AND FIELD SERVICE

TRAINING

There continues to be a strong demand for courses in Net and Gear Technology, Engineering, Navigation and Safety. The demand for the programs comes from both the inshore and offshore fleets. The programs for the offshore fleets are comprised mainly of navigation and engineering courses which prepare the candidates to write for Transport Canada Certification. While there is no current regulation for Transport Certification within the offshore fleet, there is considerable interest in the safety and navigation training programs, leading to certification as Fishing Master IV.

The training programs were conducted at the School of Fisheries, Pictou and in 44 locations throughout the province.

For 1987–88, the Training and Field Service Division achieved the highest success rate in Transport Canada navigation certificate examinations. The results are as follows:

Transport Canada Certificate	Number of Courses	Number of Fishermen Passed
Fishing Master Class I	1	8
Fishing Master Class II	2	22
Fishing Master Class III	3	29
Fishing Master Class IV	23	276
Marine Emergency Duties (M.E.D.)	2	24

Extension Programs in Fishing Communities

The Extension Programs are designed primarily to meet the training needs of the inshore harvesting sector. The planning and coordination of these programs in the fishing communities are facilitated through the work of the department's fishery representatives working in cooperation with Canada Manpower officials. Partial funding for the courses both at the school and for the extension programs is provided through Canada Employment and Immigration training funds.

A strong emphasis has been, and continues to be placed on safety programs, which include:

- First Aid
- Firefighting
- Life Saving and Survival
- Use of Survival Suits and Life Rafts
- Distress Signals

These programs are included in the navigation classes.

The breakdown of the training programs conducted in the fishing communities is as follows:

	No. of Courses	**Students Completed**
Navigation	23	276
Inshore Fishing Operations	13	156
Marine Emergency Duties (M.E.D.)	2	24
Small Gas & Diesel	1	10
Deckhand/Trawlerman	2	24
Radio Telephone	1	12

First Aid

	No. of Courses	**Students Completed**
Emergency First Aid	23	276
Mariner's First Aid	8	84
Standard First Aid	2	18

Nova Scotia School of Fisheries, Pictou

The programs at the Nova Scotia School of Fisheries are designed primarily to meet the needs of the offshore fleet. They also serve to trrain fishermen in the local area. The courses conducted at the school are:

Nova Scotia Fishermen

	No. of Courses	Students Completed
Navigation M.E.D. Deckhand	6	59
Chief Engineer Radio Telephone Small Gas & Diesel	3	23
Small Business Management	1	12

Inuit Fishermen

A seven week program for students from the Baffin Island and Northern Quebec regions who participated in the M.E.D. II and Deckhand Offshore Fleet courses was held. The program prepared the Inuit fishermen for deckhand positions on offshore shrimp trawlers operating in arctic waters.

Fishermen from the Carribean

Training programs for fishermen from overseas is arranged through joint ventures with the department and the Canadian International Development Agency (C.I.D.A./V.A.D.A.) and the International Centre for Ocean Development (I.C.O.D.).

C.I.D.A. Participants

One C.I.D.A. sponsored program was conducted during 1987–88, which drew participants from St. Kitts, Antigua, Nevis and the British Virgin Islands. The six week program was comprised of the following courses:

- Outboard Engine Maintenance
- Longlining
- Gill Net Construction and Repair
- Small Boat Safety
- Recordkeeping
- Navigation
- Fishery Officer Training
- Fish Processing
- "Train-the-Trainer" Program

I.C.O.D.

Sixteen fishermen from St. Vincent and Grenada participated in a six week program which included:

- Small Boat Safety and Navigation
- Recordkeeping
- Outboard Engine Maintenance and Repair
- Longlining
- Gill Net Repair, Construction and Setting
- Fishing Co-operatives

A six month teacher training and upgrading program was designed for staff from the Caribbean Fisheries Training and Development Institute, Trinidad. I.C.O.D. also funded an on-site training program of two weeks in Barbados and St. Lucia.

Training Summary

The following table indicates the extent of fisheries training programs conducted over the past five years for Nova Scotian fishermen.

	1983/84	1984/85	1985/86	1986/87	1987/88
Number of courses	65	76	71	69	56
Number of trainers	824	1,001	896	780	666
Number trained	824	1,001	896	780	666

Training for Nova Scotian fishermen normally takes place during the period September to March. From April to September, the school conducts training for other government agencies including the training for fishermen from overseas through the auspices of I.C.O.D. and C.I.D.A.

A summary of the training offered by the Training and Field Services Division is as follows:

	Inshore	Offshore	Processing
Navigation	Small Craft Master Fishing Master Class IV	Fishing Master I Fishing Master II Fishing Master III	

Engineering	Small Gas & Diesel Diesel Engines Hydraulics	Watchkeeping Engineer Fishing Vessel Chief Engineer 4th Class Engineer	Refrigeration for Small Plant Operator Assistant to Plant Engineer
Fishing Gear Technology	Basic Skills in Repair & Construction	Deckhand Trawlerman	
Safety	Marine Emergency Duties I Fire Fighting Life Saving, Survival First Aid	Marine Emergency Duties II Life Saving, Survival First Aid	
Business Practices	Family Business Recordkeeping Taxation Financial Decision Making		Small Plant Operator Recordkeeping Finance Management
Quality Control	Included in Fishing Gear Program	Included in Trawlerman Course	Production Staff Fish Buyers
Advisory Services	Fishing Gear & Engineering	Design of Special Programs	Design of Special Programs

AQUACULTURE

Training programs have been developed for aquaculture operators. These courses will be offered during 1988–89 at the Nova Scotia School of Fisheries in Pictou.

FIELD SERVICE

The fisheries representatives serving fishing communities and industry throughout the province provided information and monitored the service of government programs in Industrial Development, Loan Board, Aquaculture, Marketing and Training.

Training programs for Nova Scotian fishermen at the school in Pictou and in fishing communities throughout the province were co-ordinated by the Field Service and Administration staff. The Field Service Division worked in consultation with Transport Canada and the Canada Employment and Immigration Commission in processing documents related to training and arranging instruction facilities. The division also played a major role in the selection of students.

Applications to the Industrial Development Division for assistance, described elsewhere in this report, were taken by the fisheries representatives and rated according to impact and priority in the industry. Several hundred applications were handled and progress on approved projects was monitored.

Confidential reports on loan applications were completed by the Field Service for the Fisheries Loan Board. Assistance was given to fishermen in finding boat builders or used boats. Another significant function of the representatives involved supplying financial advice and additional loan information. Fishermen were also encouraged to bring their loans up to date.

Aquaculture received increased emphasis from all members of the Field Service. More attention is expected to be given to both fin fish and shellfish rearing in the future as the Aquaculture Act and Regulations are promoted and enforced.

MARINE RESOURCES DIVISION

The Marine Resources Division represents the department and the fishing industry of the province on numerous government-industry advisory committees. Its function is to ensure the needs of the industry are adequately considered in the development and implementation of management plans for the various fisheries in which provincial fishermen participate.

This year the division was representated on 50 official advisory committees dealing with groundfish, pelagics, scallops, marine plants, clams and crustaceans. The division advised on many bilateral agreement discussions with foreign nations.

The division also represented the department on five offshore oil and gas committees. The Division Director is co-chairman of the joint Nova Scotia–Canada Fisheries Advisory Committee as provided for in the Canada–Nova Scotia Offshore Petroleum Resources Accord. Through the oil and gas committees, the department ensures minimal interference with the fishing industry as a result of offshore exploration and development. It interacts directly with the Canadian Oil and Gas Lands Administration along with other federal and provincial departments involved in authorizing offshore activity.

The Resource Management and Research section of the division is divided into three units, each dealing with a particular species group. This section includes resource management officers for groundfish, invertebrates and pelagic fish. As well as providing expertise in their specific fields for management of the resource, the latter two are involved in research programs investigating species and stocks of specific interest to Nova Scotia. These studies are important to the development of new fisheries for the future and to improved management for the present. These programs involve considerable field work for which students are employed. Details of these studies are as follows:

Invertebrates

In 1987, the division participated in port sampling programs which involved collecting information on lobster and crabs at fishing ports around the province. Biological data including size frequencies, catch effort and reproductive potentials were gathered and will be used to assess the fisheries as they exist and to project how they may respond in the future. Special interest was given to lobster area 26 (formerly district 7bl.) where

an experimental size increase program was started. Over the next few years, the legal size of lobster in Inverness County will go from 2.5 to 2.75 inches. This change is expected to increase the yield from the local fishery and potentially increase recruitment. The department also worked with the Department of Fisheries and Oceans on a lobster tagging study to assess the growth and movement of lobsters in the experimental area.

Pelagic Fish

Departmental studies on the gaspereau stock of the Pictou Harbour region have provided biological information on habitat alteration and gaspereau production. Due to the recent modification of the Pictou Causeway Reservoir from a fresh water to a sea water environment, emphasis has been placed on the potential of the Middle River Reservoir for gaspereau production. In 1987, gaspereau population dynamics were examined using data from species composition, size and age frequency, and the movement of spawning fish into the reservoir. The early life history of gaspereau was investigated through sampling of larval and juvenile density, distribution and growth. Plankton productivity in the reservoir was also studied in relation to environmental factors.

AQUACULTURE AND INLAND FISHERIES

This division is responsible for the planning, implementation and administration of policies and programs aimed at conserving and enhancing the fisheries resource where land and water meet. Major responsibilities include:

1) Administration of the Aquaculture Act and Regulations under which aquaculture licenses and leases are issued; and the Federal-Provincial Agreement on Aquaculture Development, which provides for coordination of departmental responsibilities and programs for the orderly development of this resource sector. A Federal-Provincial Industry Sector Committee, composed of representatives from all molluscan culture sectors and the Aquaculture Association of N.S., assists the two levels of government by providing ongoing advice to respective Ministers and by developing a long term Aquaculture Development Plan for the Province's Aquaculture Research Sector.

2) Management of the recreational trout fishery, which includes producing and distributing 1.2 million trout to some 220 rural and urban lakes across the province, conducting lake and stream surveys, creel censi, and other field and extension work which support the conservation and enhancement of the recreational trout fishery.

3) Providing departmental advice and technical expertise to provincial and federal agencies, intergovernmental committees and the public involved in the management of the resource base in the coastal zone.

4) Administrating and directing the implementation of applied research and development projects which support aquaculture development. These initiatives are carried out through the Federal-Provincial Regional Economic Regional Agreement (fisheries sector).

5) Providing extension services to the public in the aquaculture and inland fisheries resource sectors through resource material, demonstration sites, on-site project evaluations and public seminars.

The divisional headquarters are maintained at the Fisheries School in Pictou, while the Aquaculture Coordinator, and licensing and leasing administration staff are based in the Halifax office. Regional operational facilities include an experimental shellfish hatchery and shellfish culture demonstration site at Pleasant Point (Halifax County) and trout production facilities at Fraser's Mills (Antigonish County) and McGowan Lake (Queen's County).

Aquaculture Development

This section provides field and extension support to people applying for aquaculture licenses and leases, as well as to operators. Services include site evaluations, water quality surveys, technical advice on culture methods and the provision and sale of hatchery, finfish and shellfish stock for start-up operations.

Site Inspections

This year, 70 new applications for mollusc aquaculture activity (lease, license, experimental permits) were received. Twenty-five areas were surveyed for initial water quality analysis. Other services included preliminary site inspections and the provision of technical advice. Water analysis is carried out by Environmental Protection Service (EPS) for bacterial content and the Pathology Laboratory for heavy metal content.

Shellfish Seed Stock Production

Seed sales to growers during the year under review was as follows:

Oysters:	
European	30,000
Native	85,000
Quahaugs	125,000
Bay Scallops	250,000

Assistance to the Private Sector

A private company, S.F.T. Ventures, established a commercial scale shellfish hatchery in Blandford, Lunenburg County. Currently focusing on native Bay Scallops and European oysters, the company plans to eventually extend operations to include other shellfish and finfish species. The department assisted the company by providing technical assistance and hatchery space until its own hatchery became operational. S.F.T. is now producing commercial quantities of native and European oysters and bay scallops for the 1988 season. Two additional hatcheries are in the planning stages.

Research and Development

Research and development aimed at improving molluscan shellfish hatchery production techniques continues at Pleasant Point. This year,

production focused on native and European oysters, quahaugs and bay scallops. Hatchery spat was distributed to the private sector for commercial growout and was used by the department for overwintering and other trials.

Research continues into hatchery methods and new candidate species for aquaculture.

Publications

- Bottom Culture of the European Oyster in Nova Scotia: ERDA #6
- A Preliminary Assessment of Aquaculture Potential for Sea and Bay Scallops in the Annapolis Basin: ERDA #19
- Paralytic Shellfish Poisoning and Implications for Aquaculture in the Annapolis Basin and Bay of Fundy Waters: ERDA #9
- Diseases of Cultured Finfish and Shellfish; A Parasite Survey of Selected Nova Scotia Aquaculture Facilities: ERDA #10

Finfish Aquaculture

In providing extension services to finfish aquaculture, 42 site visits were conducted by departmental staff. Written and verbal responses were made to service about 300 inquiries regarding finfish aquaculture. As well, 24 emergency visits were undertaken regarding fish health concerns. Again this year, the services of Dr. Robin MacKelvie were made available to aquaculturists regarding fish health matters.

Formal training sessions were organized at the Pictou Fisheries Training Centre facility, with 48 participants attending the workshops. Instructors included federal and provincial specialists, as well as representatives from the aquaculture service industries.

This year, 253,385 rainbow trout were sold to commercial sites for aquaculture seedstock. As well, about 180 recreational aquaculturists purchased 250,000 speckled and rainbow trout for their private ponds.

The department operated a salmon broodstock spawning service for the second year. Industry broodfish are picked up at the donor's site, trucked to Fraser's Mills hatchery, and conditioned and spawned. The kelt and eyed eggs are then returned to the donor. The service is offered without charge to the user. This year, 150,000 eyed salmon eggs were produced and the facilities were expanded to accommodate a program capable of producing 1,000,000 eggs by next year.

INLAND FISHERIES

Production and Distribution

Inland fisheries activities expanded during the year in response to increased demands from the recreational sector for enhancement efforts. The department's new hatchery at McGowan Lake opened in October and stocked 230,000 fall fingerlings. As well, the department's Fraser Mills hatchery remained in full production and expanded its broodstock holding capabilities. St. Peter's hatchery also continued its dual role of servicing the aquaculture industry and stocking public waters.

Fish distribution was within the following program areas:

Fall fingerlings (wild replenishment)	530,000/142 sites
Spring yearlings (urban recreational)	262,000/ 87 sites
Egg and fry (public participation)	2.6 million/800 volunteers
Aquaculture (commercial)	253,000/22 sites
(recreational)	250,000/180 sites
Research	25,000 trouts
	60,000 eggs

Research and Enhancement Programs

The division maintained the angling prohibition on Giant's, Sullivan and Magginist Lakes to permit the continued research on speckled trout broodstock development.

A joint project was undertaken with Parks Canada staff at the Kejimkujik National Park to attempt to determine a genetic tolerance factor to acidified waters. As well, Hurley Fisheries Ltd. was assisted in a DFO funded study of egg and fry survival in acidified waters.

The division undertook a detailed two year study on the use of limestone gravel as a mitigative tool to combat the effects of low ph water on salmonids. This work was carried out in cooperation with the Department of Fisheries and Oceans and the Nova Scotia Department of the Environment.

A trial project was undertaken involving the release of 10,000 fin dipped speckled trout of anadromous parentage to enhance the sea-run component on two separate river systems.

Division staff assisted Dr. R. Cunjack, DFO, in his study of salmonid overwintering habitat and R. Alexander in his fish counting fence on the South River, Antigonish County.

Nine differing sources of wild brook trout were used in the continuing genetic research program at the Frasers Mills facility. Pure and hybrid progeny were produced for future research and enhancement efforts.

Detailed population estimates were conducted on the 20 indexed streams in the province that were selected as representative for their respective areas. This effort provides an assessment of both enhancement techniques and of the native production.

Extension Services

Publications in this area included the Adopt-a-Stream Manual (to provide a mechanism for controlled public involvement) and the Trout Education Package (curriculum additive within the Department of Education).

As well, an initial printing of 10,000 Recreational Angling maps were very well received and a second printing is underway.

The division's capacity for public education was greatly enhanced with the incorporation of the 900 square foot Interpretive Centre at the McGowan Lake hatchery. In total, the three production hatcheries dealt with 15,000 visitors this year. As well, divisional staff attended 75 meetings and conferences and answered an estimated 1,600 inquiries.

MARKETING

This division provides a diversity of services to all levels of the fishing industry, as well as to the seafood retail sector, foodservice industry and the general public. Support services offered by the division are directed towards increasing sales potential of seafood and enhancing the marketing of seafood products to consumers.

MARKET DEVELOPMENT AND PROMOTION

General

The role of this section is to provide comprehensive and timely information to the fishing industry on seafood market opportunities worldwide and to ensure that information on Nova Scotia seafood exporters and products is available internationally. The section also assists in the promotion of Nova Scotia seafood both within and outside the province. During the year, the Marketing Division responded to 1,280 requests for information and distributed 710,000 pieces of promotional material.

Trade Issues

Staff provided background material which was used to coordinate provincial input into the free trade agreement. Position papers were prepared in conjunction with other provincial departments. The division monitored developments in U.S. trade actions against fresh groundfish and saltfish.

Seafood Publications

The selection and availability of promotional material was improved during the year with the addition of two new recipe pamphlets to the existing collection of sales aids. Materials developed during the year focused on the health benefits of eating seafood, particularly those associated with the Omega-3 fatty acids. More than 550,000 recipe pamphlets, seafood posters and other promotional materials were distributed to retailers, food service operators and the general public.

The Directory of Nova Scotia Fish Products and the Retail Outlets pamphlet are reprinted annually to reflect up-to-date information. The Directory is a buyers guide for seafood produced in the province and is distributed internationally. The Retail Outlets pamphlet lists the many outlets within the province where fresh and frozen seafood may be purchased by consumers.

Seafood Trade Shows

The division participated in the two largest seafood shows in the United States, Boston Seafood Show '87 and Sea Fare '87 in Los Angeles. The Nova Scotia booth provided information on the quality and types of seafood produced in the province. Provincial staff assisted Nova Scotia exhibitors by helping them with the design and set-up of their booths, providing booth hardware and samplings of Nova Scotia seafood products. Two departmental seafood consultants also provided individual assistance to these companies. The shows have shown considerable growth and effectively cover major American markets, along with key markets in Europe and the Pacific rim.

Promotions—In Province

Within the province, the department conducted numerous seafood cooking demonstrations at exhibitions, shopping malls and consumer shows such as the Atlantic Winter Fair and Food Extravaganza. These promotions are aimed at increasing consumer awareness of Nova Scotia seafood. The electronic and print media also provided a valuable avenue for distributing seafood information especially through radio shows aimed at the homemaker and the publication of articles and seafood recipes. Retailing workshops were conducted for major supermarket chains in the process of expanding their seafood merchandizing efforts.

June—Seafood Month

June was designated as seafood month for the first time in 1987. Key events included a Women's 10 kilometer race, participation at the annual CBC Information Morning Birthday Party, a Seafood Barbecue Kick-Off in Halifax hosted by the Minister, instore food demonstrations to promote June as seafood month and radio interviews throughout the month.

Training

This ongoing program, aimed at training food sales staff about Nova Scotia seafood and how to increase the sales and profits at the seafood counter, was offered to retail stores during 1987.

The division also provided training programs to the kitchen staff of institutions. The program focused on the various techniques of preparing seafood that can save staff time and are efficient when preparing large quantities of food.

One day seminars for food service operators were offered by the department through the Tourism and Hospitality Institute of Nova Scotia.

ADMINISTRATIVE SERVICES

This division provides administrative support to the department including financial, personnel and office services. Planning, economics, statistical, data processing and communications services are also provided as required.

Some of the major projects undertaken by the division during the year include:

Fisheries General Policy

Work began on updating the 1980 Fisheries General Policy Document which acts as a blueprint for the general direction of the department's programs. The Nova Scotia fishery generates close to 1 billion dollars annually for the provincial econom and the updated policy is designed to lead the industry into the 1990's. The completed policy document is expected to be published early in the next fiscal year.

Aquaculture Statistics

Under the terms and conditions of the Federal-Provincial Agreement on Aquaculture Development, the department is responsible for collecting aquaculture production statistics. In 1987, aquaculture production exceeded 500 metric tonnes worth nearly $2 million.

Industry Statistical Profile

Work was completed on an updated version of the statistical profile of the Nova Scotia fishing industry. This statistical overview of the fishery covers such topics as landings, landed and market values by species and counties, the fishery in relation to the provincial Gross Domestic Product, and production and export statistics.

Administrative Information and Control Systems

During the year, the Fisheries Loans System completed its move from the Hewlett-Packard 250 mini-computer to the IBM mainframe at the Provincial Data Center. The new arrangement provides the flexibility required for a growing accounting system to manage the $150 million loan fund.

The Trout Management System was completed with the exception of the reporting module. The Plant Registration and Fish Buyers License system was well underway by year end. In the next fiscal year, the Aquaculture Management System will be a priority, along with enhancements to the Trout Management System and the Plant Registration and Fish Buyers License System.

Weatheradio Canada

Cost-sharing with Environment Canada continued to fund this highly successful series of VHF radio stations in Nova Scotia and Prince Edward Island. This service disseminates marine and public weather information.

Fishery Exhibitions

During the year, the department was represented at the Nova Scotia Fisheries Exhibition in Lunenburg and the first International Fisheries Equipment Exposition in Halifax. As a result of the high successful first event the organizers of the latter exhibition have decided to hold the show every two years in Halifax.

STATISTICAL REVIEW

All fisheries production statistics given here for the calendar year 1987 are revised figures supplied through the courtesy of the federal Department of Fisheries and Oceans. They may be subject to minor adjustments as late returns from firms and individuals are received and processed in that Department.

NOVA SCOTIA FISHERIES MAJOR SPECIES
LANDINGS OF THOSE SPECIES YIELDING
OVER ONE MILLION DOLLARS ANNUALLY

(listed in Descending Order of Value in 1987)

	Landings (Metric Tons)		Value ($,000)	
	1987	1986	1987	1986
1. Lobsters	18,423	17,990	160,341	140,673
2. Cod	132,493	139,965	120,747	83,000
3. Scallops	66,295	49,298	83,463	63,021
4. Haddock	23,801	39,031	32,212	34,990
5. Pollock	42,261	42,315	23,534	16,064
6. Herring	98,392	74,928	18,868	15,315
7. Flounders	16,928	17,053	16,316	14,431
8. Hake	15,245	12,118	11,390	5,594
9. Redfish	34,220	34,773	11,286	10,768
10. Halibut	1,776	2,533	9,580	12,372
11. Crabs	2,581	2,389	7,396	4,528
12. Shrimp	2,578	2,221	7,328	6,001
13. Swordfish	948	1,061	6,685	7,112
14. Cusk	3,949	2,104	3,519	1,236
15. Clams	2,614	1,968	2,208	2,758
16. Mackerel	5,242	3,877	1,821	1,217

Table I

Nova Scotia Fisheries
Landed and Marketed Value
1950–1987

Year	(Value in $,000) Landed Value	Marketed Value
1955	23,582	47,093
1960	26,094	51,753
1965	49,371	93,443
1970	55,652	105,939
1975	91,010	208,574
1980	230,911	438,799
1981	263,727	484,182
1982	259,411	523,191
1983	276,451	497,664
1984	265,335	533,500
1985	312,733	562,919
1986	423,973	805,548
1987	524,147	995,800 (1)

(1) This is an estimate based upon recent average past relationships between landed and marketed values.

Table II

Nova Scotia Fisheries
Landings and Landed Value by Species Group

	Landings (Metric Tons)		Value ($,000)	
	1987	**1986**	**1987**	**1986**
Groundfish	275,024	294,687	232,051	181,038
Pelagic & Estuarial	108,117	82,793	29,411	24,899
Molluscs & Crustaceans	92,797	74,169	261,653	217,154
Miscellaneous (1)	17,433	11,789	1,032	882
	493,371	463,438	524,147	423,973

(1) Seaweeds, worms, tongues, roes, unspecified

Table III

Landed Value of Fisheries by Counties

County (1)	Landed Value (2) ($,000) 1987	1986	Per Cent Change (3) 1986/87
Shelburne	112,009	87,707	+ 28
Lunenburg	93,045	77,802	+ 20
Yarmouth	64,912	52,851	+ 23
Digby	50,804	44,038	+ 15
Cape Breton	54,316	39,964	+ 36
Guysborough	30,540	28,233	+ 8
Halifax	25,760	20,872	+ 23
Queens	21,885	17,545	+ 25
Inverness	22,062	17,773	+ 23
Victoria	13,156	10,098	+ 30
Pictou	10,585	8,192	+ 29
Richmond	7,909	6,689	+ 18
Cumberland	6,639	4,478	+ 48
Antigonish	5,206	3,690	+ 41
Colchester	2,214	1,926	+ 15
Annapolis	1,803	1,232	+ 46
Kings	1,207	849	+ 42
Hants	97	36	+ 169
	524,147	423,973	+ 24

(1) Counties are in order of the 1987 landed value.

(2) Landed value includes groundfish, pelagic and estuarial, molluscs and crustaceans, viscera, seaweed and other.

(3) Increase (+)

Table IV

Total Landed Weight of Fisheries by Counties

County (1)	Landed Weight (2) (MT)		Per Cent Change (3)
	1987	1986	1986/87
Lunenburg	98,004	91,474	+ 7
Shelburne	78,744	71,257	+ 11
Cape Breton	57,357	60,055	− 4
Guysborough	50,342	57,613	− 13
Digby	58,896	53,253	+ 11
Yarmouth	62,409	47,376	+ 32
Inverness	16,161	18,050	− 10
Halifax	16,711	16,703	0
Queens	15,503	14,210	+ 9
Richmond	13,443	14,001	− 4
Pictou	9,824	6,750	+ 46
Victoria	7,584	6,659	+ 14
Antigonish	3,850	2,841	+ 36
Colchester	1,201	1,125	+ 7
Cumberland	1,636	1,073	+ 52
Kings	763	573	+ 33
Annapolis	759	520	+ 46
Hants	184	42	+ 338
	493,371	463,438	+ 6

(1) Counties are in order of the 1987 landed weight.

(2) Landed weight includes groundfish, pelagic and estuarial, molluscs and crustaceans, viscera, seaweed and other.

(3) Increase (+); Decrease (−).

Table V
Landed Weight and Landed Value of Fisheries
by Species Group by Counties
(1987–1988)

County	Species Group (1)	Landed Weight (Metric Tons)		Landed Value ($,000)	
		1987	1986	1987	1986
Annapolis	Groundfish	189	186	255	140
	Pelagic	4	2	1	3
	Shellfish	566	332	1,547	1,089
	Other	–	–	–	–
Antigonish	Groundfish	1,178	860	767	361
	Pelagic	2,050	1,395	605	334
	Shellfish	622	586	3,834	2,995
	Other	–	–	–	–
Cape Breton	Groundfish	51,302	53,799	39,508	30,048
	Pelagic	2,998	4,628	754	749
	Shellfish	3,057	1,622	14,054	9,157
	Other	–	5	–	11
Colchester	Groundfish	26	14	29	15
	Pelagic	37	25	37	23
	Shellfish	1,138	1,086	2,148	1,888
	Other	–	–	–	–
Cumberland	Groundfish	4	1	7	2
	Pelagic	332	86	128	57
	Shellfish	1,300	987	6,504	4,421
	Other	–	–	–	–
Digby	Groundfish	16,508	23,656	18,411	17,884
	Pelagic	26,152	18,048	4,971	3,901
	Shellfish	15,457	11,516	27,399	22,243
	Other	779	9	23	34
Guysborough	Groundfish	39,273	44,460	20,708	19,326
	Pelagic	8,818	8,740	1,595	1,395
	Shellfish	2,251	2,414	8,237	7,511
	Other	–	–	–	–
Halifax	Groundfish	13,421	13,827	16,691	13,118
	Pelagic	1,972	1,836	2,362	2,174
	Shellfish	1,318	1,039	6,707	5,580
	Other	–	–	–	–

Hants	Groundfish	4	18	5	13
	Pelagic	160	16	58	7
	Shellfish	20	8	34	16
	Other	—	—	—	—
Inverness	Groundfish	13,037	14,211	10,433	7,980
	Pelagic	350	909	144	367
	Shellfish	2,774	3,079	11,485	9,424
	Other	—	—	—	—
Kings	Groundfish	262	165	415	187
	Pelagic	449	356	304	199
	Shellfish	52	45	488	365
	Other	—	8	—	98
Lunenburg	Groundfish	55,618	57,860	36,007	30,415
	Pelagic	2,350	1,766	547	463
	Shellfish	40,036	31,848	56,490	46,923
	Other	—	—	1	—
Pictou	Groundfish	173	225	118	82
	Pelagic	8,084	4,655	1,916	1,014
	Shellfish	1,509	1,589	8,542	7,087
	Other	58	281	9	9
Queens	Groundfish	8,695	8,752	8,641	6,492
	Pelagic	322	452	483	196
	Shellfish	6,486	5,005	12,757	10,856
	Other	—	—	2	—
Richmond	Groundfish	12,475	13,345	5,100	4,782
	Pelagic	598	371	250	122
	Shellfish	370	285	2,559	1,785
	Other	—	—	—	—
Shelburne	Groundfish	47,013	47,169	57,424	39,144
	Pelagic	10,957	8,545	6,579	7,000
	Shellfish	5,263	4,912	47,221	40,972
	Other	15,511	10,632	785	592
Victoria	Groundfish	5,092	4,215	5,253	3,276
	Pelagic	1,244	1,206	438	382
	Shellfish	1,248	1,238	7,465	6,436
	Other	—	1	—	2

Yarmouth	Groundfish	10,754	9,925	12,279	7,774
	Pelagic	41,240	29,762	8,239	6,512
	Shellfish	9,330	6,580	44,182	38,405
	Other	1,085	1,110	212	160

(1) "Pelagic" includes pelagic and estuarial.
"Shellfish" includes molluscs and crustaceans.
"Other" includes livers, tongues, scales, roe and oil, sea plants, mammals, worms.

Table VI

Atlantic Provinces Landings and Landed Value—1987

	Landed Weight (Metric Tons)	Landed Value ('000)
Nova Scotia	493,352	524,168
Newfoundland	495,579	276,570*
New Brunswick	151,588	118,511
Prince Edward Island	56,748	68,368

*Preliminary figure

Table VII

Nova Scotia Fishery Profile
Employment (1987/88)

Fishermen	13,540
Plant Workers—Yearly Average	9,000
Registered Fish Processing Establishments	372

The Nova Scotia Fishing Fleet
By Size and Vessel Categories (1987/88)

Inshore Fleet (Length/ft)	**Number of Boats**
Less than 20′	1,149
20′–24.9′	421
25′–29.9′ & 30′–34.9′	1,653
35′–39.9′	1,021
40′–44.9′	786
Total	5,030
Nearshore Fleet (Length/ft)	
45′–49.9′	27
50′–54.9′	20
55′–59.9′	36
60′–64.9′	117
Total	200
Offshore Fleet (Length/ft)	
65′–89.9′	8
90′–99.9′	36
100′–124.9′	55
125′–149.9′	28
150′ +	26
Total	153
TOTAL OF BOATS ALL SIZES	5,383

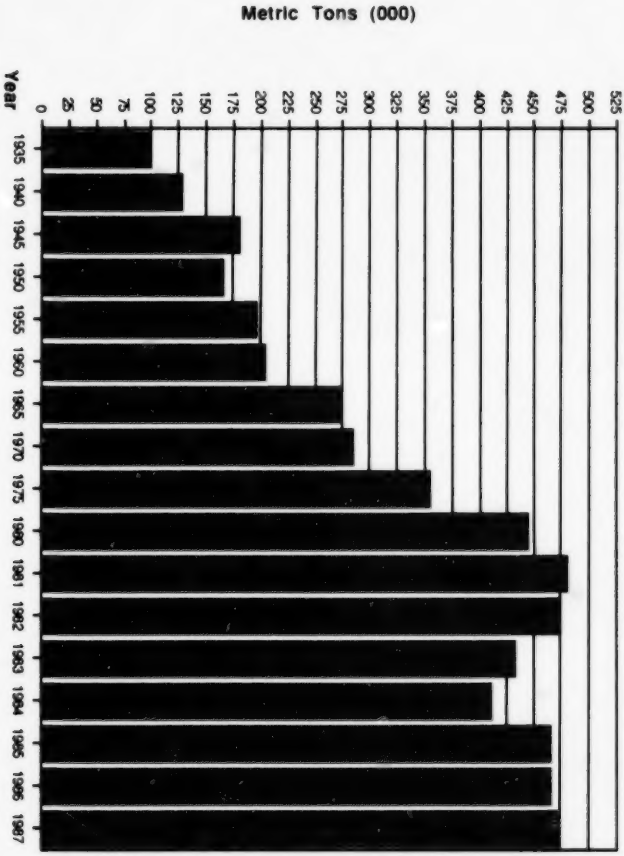
Department of Fisheries
Ordinary Expenditures

Fiscal Year Ending March 31	Total Ordinary Expenditure
1966	$ 340,653
1967	321,742
1968	530,166
1969	412,577
1970	458,034
1971	1,020,778
1972	1,373,784
1973	908,457
1974	3,138,359 (1)
1975	1,088,534
1976	661,763
1977	2,350,456
1978	3,149,131
1979	5,377,213
1980	5,841,649
1981	11,047,135(2)
1982	13,758,223
1983	12,642,688
1984	10,891,506
1985	11,496,630
1986	9,482,968
1987	7,964,297
1988	8,926,000

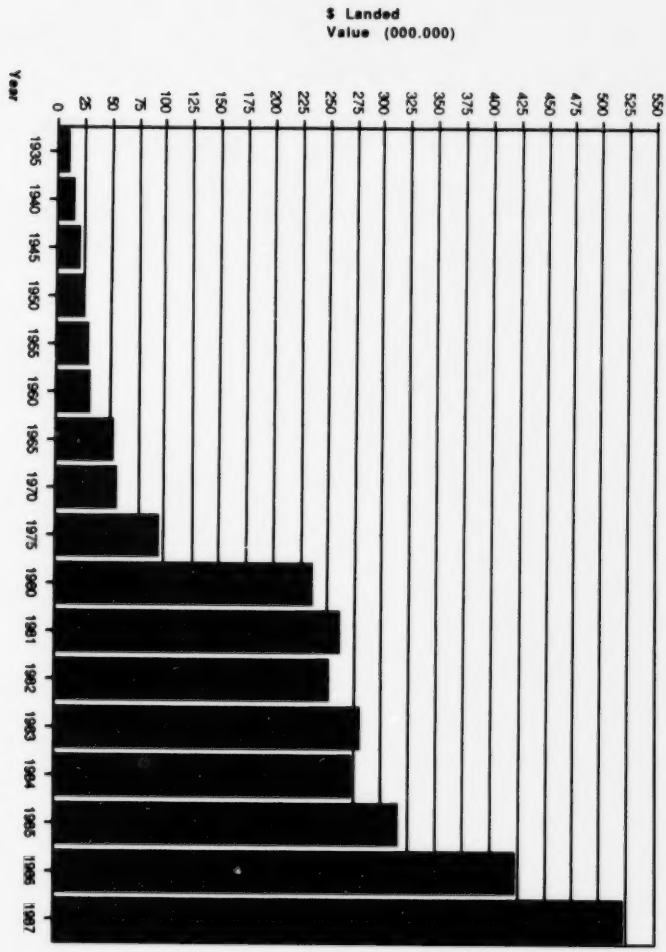
(1) More than $2 million was spent in the form of special assistance to help the industry recover from a storm in June 1973.

(2) Beginning in 1981, capital advance interest charges for the Fisheries Loan Board are included in the Department of Fisheries estimates. These charges were previously accounted for under Department of Finance estimates.

Nova Scotia
Landings Profile 1986



Nova Scotia
Landed Value Profile 1986



Department of Fisheries
Telephone 424-4560—Halifax
485-4525—Pictou
485-5056—Pictou
Fax 424-4671—Halifax
485-4014—Pictou

Minister	Hon. John G. Leefe	Halifax
Secretary to the Minister	Mrs. S.M. Grandy	Halifax
Deputy Minister	D.A. (Sandy) MacLean	Halifax
Secretary to the Deputy Minister	Miss M.L. Evans	Halifax
Finance & Administration Division		
Director	J.A. Marsters	Halifax
Supervisor, Socio-Economic Support	D.C. Thomas	Halifax
Supervisor, Administrative Services	C.G. Allen	Halifax
Personnel/Payroll Clerk	Ms. C. MacDonald	Halifax
Accounting Clerk	Ms. V. Van Derdonk	Halifax
Accounting Clerk	Mrs. N.A. Wallace	Halifax
Clerk Typist	Miss S.J. Kane	Halifax
Clerk Receptionist	Ms. M. Lyons	Halifax
Equipment Officer	F.S. MacKay	Pictou
Public Information Officer	Ms. D. Kenny	Halifax
Coordinator, Support Services	K.R. Weston	Halifax
Marketing Division		
Director	Ms. J.L. Raymond	Halifax
Secretary to the Director	Ms. J.L. Ganner	Halifax
Seafood Consultant	Mrs. A.E. Bryant	Halifax
Home Economist	Ms. M.C. O'Neil	Halifax
Marine Resources Division		
Director	A.A. Longard	Halifax
Administrative Assistant	Ms. B. Corneau	Halifax
Supervisor, Crustacean Resources	S.G. Roach	Halifax
Resource Management Officer	P.C. Underwood	Halifax
Resource Management Officer	R.H. Crawford	Antigonish
Aquaculture and Inland Fisheries		
Director	L.L. MacLeod	Pictou
Secretary to the Director	Mrs. C. Cooper	Pictou
Supervisor, Inland Fisheries	G.M. Hill	Pictou
Aquaculture Coordinator	Ms. C. Enright	Halifax

Aquaculture Administrator	C.F. MacKinnon	Halifax
Legal Services Technician	Ms. K. Lipsett	Halifax
Biologist	A.G. Bagnall	Ostrea Lake
Maintenance Worker	R.A. Truen	Ostrea Lake
Hatchery Manager	D.A. MacLean	Fraser's Mills
Fisheries Technician	D.J. MacDonald	Fraser's Mills
Rearing Pond Attendant	D.D. Murrant	Fraser's Mills
Rearing Pond Attendant	D. MacGrath	Fraser's Mills
Hatchery Manager	M. McNeil	St. Peters
Rearing Pond Attendant	M. MacPhail	St. Peters
Rearing Pond Attendant	D. MacNearney	St. Peters

Industrial Development Division

Director	G.R. Richard	Halifax
Secretary to the Director	Mrs. N.L. Riles	Halifax
Coordinator, Development Programs	D.F. Hansen	Halifax
Incentive Programs Assistant	vacant	Halifax
Fisheries Inspection	Ms. M.E. Meagher	Halifax
Fisheries Inspection	D. Rodgers	Halifax
Fisheries Inspection	T. LeBlanc	Pictou
Supervisor, Gear	O.E. Egilsson	Pictou
Supervisor, Plants and Facilities	G.B. Scott	Halifax
Fisheries Technician	W.J. MacDonald	Halifax
Port Facilities Engineer	M.F. Giles	Halifax
Assistant Engineer	E.J. MacKenzie	Halifax
Supervisor, Resource Technology	M.A. Drebot	Halifax

Nova Scotia Fisheries Loan Board

Executive-Director	J.A. Marsters	Halifax
Manager, Fisheries Loans	E.A. MacIntosh	Halifax
Secretary	Miss N.E. Corkum	Halifax
Clerk Typist	Mrs. R.A. Jardine	Halifax
Stenographer	Miss D.M. Jollimore	Halifax
Chief Accountant	C.E. Decker	Halifax
Accounting and Insurance Clerk	Mrs. L.M. Fraser	Halifax
Accounting Clerk	Mrs. B.J. Tribble	Halifax
Senior Loan Officer	J.P. Sarty	Halifax
Loan Officer	M. Everett	Halifax
Loan Officer	B.E. Cox	Halifax
Assistant Loan Officer	Mrs. L.M. Provender	Halifax
Technical Services Officer	M. Myketyn	Halifax
Fishing Vessel Inspector	B.G. Stockley	Halifax
Fishing Vessel Inspector	W.R. Buffett	Halifax
Fishing Vessel Inspector	T. Prewett	Halifax
Loans Administrator	E.J. Pellerin	Halifax

Training and Field Services Division
Training

Director	J.J. McLevey	Halifax
Secretary to the Director	Mrs. B.J. O'Brien	Halifax
Supervisor, Fisheries Training Centre	D.F. Robertson	Pictou
Chief Clerk	Mrs. S.M. O'Toole	Pictou
Instructor (Navigation)	L.M. Dube	Pictou
Instructor (M.E.D.)	A.A. Kaiser	Pictou
Instructor (Navigation/M.E.D.)	D.B. MacCallum	Pictou
Instructor (Engines/M.E.D.)	J.W. Grant	Pictou
Instructor (Engines)	Ira Grant	Pictou
Instructor (Engines)	G. Gauthier	Pictou
Instructor (Business)	Miss B.J. Wright	Pictou
Instructor (Nets and Gear)	A.F. Tobey	Pictou
Maintenance Worker	E.G. Dalton	Pictou
Maintenance Worker	vacant	Pictou
Chief Cook	Mrs. A. MacKay	Pictou
Housekeeping Aid	Mrs. L. Betts	Pictou

Field Services

Fisheries Representative	C.W. Rankin	Pictou
Fisheries Representative	A.P. Kehoe	Petit de Grat
Fisheries Representative	G.T. Boudreau	Little Dover
Fisheries Representative	G.C. Mossman	Rose Bay
Fisheries Representative	G. D'Entremont	Barrington Passage
Fisheries Representative	A.J. Muise	Middle West Pubnico
Fisheries Representative	R.K. McDormand	Granville Ferry

Organizational Chart Department of Fisheries